PREVENTION AND COST CONTAINMENT*

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I shall frame my paper around four questions: Do we have the means for prevention? Assuming the means for prevention, can they be effectively applied? Assuming successful application of prevention, will costs be saved? Assuming costs will be saved, will health care costs actually be contained?†

THE MEANS FOR PREVENTION

My first question, about the means for prevention, asks in essence whether we have the technical ability to prevent disease and thereby to limit morbidity and mortality. The question will sound to some like a brash challenge to the entire institution of modern medicine. Everyone knows that in individual patients at least some medical treatments work. When we talk of prevention in relation to the costs of a social policy, however, we address our question of impact to populations, not to isolated individuals. The question is whether the technique has a detectable effect on the health of a group.

To begin to answer the question, one needs more information than that a vaccine raises immune levels or that a drug has a demonstrable physiological effect without undue side effects. One needs to know that a population given a vaccine, say the pertussis vaccine, was less often laid low by the infectious disease in question than a comparable control population, that is, we must know the impact of the intervention on a relevant outcome as endpoint in the population. The same goes for drugs or for surgery.

This information is available for few of the host of interventions that

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physicians prescribe or execute every day, in the name of secondary or tertiary prevention. One must beware of facile assumptions in this field. Demonstration that a particular condition can result from a specific causal factor is not in itself sufficient to prove that an intervention directed at that causal factor will correct the condition. Wernicke-Korsakoff's syndrome is often a consequence of thiamine deficiency associated with alcoholism: it does not automatically follow that to lace alcoholic beverages with thiamine, as proposed in a recent article in the *New England Journal of Medicine*,[1] will prevent the syndrome and thus pay for itself. To take a painful example from our own research, we know that severe malnutrition during pregnancy reduces birthweight. Yet when we supplemented the diets of poor black women in New York City who were at high risk of low birth weight, despite immense effort we failed to raise the birth weight of their infants.[2]

While we must be humble before our relative lack of knowledge, a number of interventions are known to be technically effective. Effective interventions available to practitioners most often involve secondary prevention, usually a screening test or examination for early detection of a condition, followed by appropriate treatment. A list of these conditions among adults includes pre-eclampsia and hypertension, breast cancer, cervical cancer, and rectal cancer, and, among children, Down's syndrome, Tay-Sachs disease, phenylketonuria, and depressed cognitive competence in the absence of brain damage. The evidence is equivocal or still to be gathered for diabetes, glaucoma, anemia, neonatal hypothyroidism, neural tube defects, and many others. Effective interventions available to public health practitioners include a familiar array of vaccines, regulation of food and water (including such additives as chlorine and fluorides), and infectious disease surveillance and control, including the venereal diseases. We can conclude that we have some, but not a great many means for prevention.

Effectiveness of Prevention

We now turn to the second question, and examine evidence that preventive techniques can be effectively applied. I shall begin with the effects of medical care in communities. Skepticism about the effects of medical care was long quiescent, and has only lately risen afresh as advanced societies have been confronted daily with the consequences of the unheeding triumphs of technology. Most of the dismay flows from the unexpected

adverse effects of medical treatments in widespread use, as with oral hypoglycemic agents, oral contraceptives, or postmenopausal steroid therapy.

But, as Archibald Cochrane has emphasized, often too we fail to find any beneficial effects of specific treatments and programs when the benefits have seemed self-evident.[3] Thus we have failed to show measurable advantage—aside from prenatal nutritional supplementation already mentioned—for a multitude of drugs including oral hypoglycemic agents, for intensive care units for myocardial infarcts, for the generality of coronary bypass surgery, for social casework, continuity of medical care, the counselling of potential delinquents, and much else.

The problem goes beyond the effectiveness of specific programs. There is not much reason to expect that medical care directed at self-selected individuals will affect the health of a defined population. If one does, one is looking at the wrong target. Medical care in the United States aims only to deal with spells of illness perceived as such by an individual who then solicits care. Such care should not be expected to influence community health when there are so many limitations on who gets particular forms of care, on the stage of the disorder at which care is given, and on what that care actually aims to accomplish.

When health care is comprehensive, however—that is, when it includes medical care and prevention combined with public health programs and is directed at communities—then health care can make a difference. These effects have most often been demonstrated in the less developed world. For instance, Sidney Kark and his colleagues demonstrated notable health effects in South Africa 25 years ago.[4] Prevention was their guiding principle; they succeeded because their programs were comprehensive in the sense I have described.

But when we turn to the effects of prevention at the societal level, recent discussions led by such sound epidemiological thinkers as Thomas McKeown[5] have again shaken settled convictions. For diseases like diphtheria, tuberculosis, and typhoid, and even pneumonia and bronchitis, the impact of public health and medical techniques on time trends of death and sickness have not been obvious. In mortality curves of the past century, the advent of immunization for diphtheria and typhoid and of chemotherapy and antibiotics for tuberculosis and lower respiratory disease—all tried measures—appear as no more than dimples in a long and steady decline. From such trends one may deduce that economic and social

changes are the major determinants of changes in the health patterns of societies.

Some critics assume, from such analyses, that health care in all its forms contributes little to the health of societies, and that only broad socioeconomic change will be effective. That conclusion is premature. For instance, in Cuba the postrevolutionary health care program can stand as a national experiment in comprehensive care, and, in my view, the data demonstrate the effectiveness of that experiment.[6]

In more developed societies, inference about the effects of health programs is often tenuous and does not in any event relate to comprehensive approaches of the Cuban kind, which occur only with radical political change. But even specific health interventions are confounded by many other factors, and better initial levels of health reduce the size of the expected effects. Thus, the main problem is to show that health care can produce change in the health of societies over and above that resulting from social and economic change. Personally, I think that a close reading of the data supports this proposition for a number of specific programs, including the traditional immunization programs mentioned above.

For several now underway, however, the evidence is more ambiguous. To take the example of hypertension, we know that treatment lowers blood pressure and reduces complications, and that some antihypertensive programs addressed to selected patient groups, if not all, have succeeded. A much larger proportion of people who have the disorder have, in recent years, become aware that they have it, and many more are under treatment. At the same time, mortality from hypertension and associated disease has declined. Yet how much this change is over and above a declining trend that began well before the widespread use of antihypertensive drugs we do not know.

Still, the list of effective preventive programs is not insubstantial; it runs across the spectrum of the acute and chronic infectious diseases, obstetric and child care, and some chronic diseases including breast cancer and probably cervical cancer. Many planners are placing their hopes not only on programs but on individuals. They aim to bring about changes in personal behavior that affect health in a major way—especially smoking, diet, exercise, and alcohol abuse. Here we enter areas of uncertainty and contention.

Health education in its conventional form, when deployed against the litany of scourges of our time, has not consistently proved effective. Yet

there can be little doubt, on technical grounds. that all these forms of behavior are major contributors to preventable mortality and morbidity, that changed behavior reduces the associated risks, and that behavior change is the appropriate endpoint for education.

The best-measured exposure is smoking. The failures of short-term health education campaigns to induce population changes in the smoking habit have sapped the morale of health educators, and contributed much to a sense of ineffectiveness in preventive programs. Yet my own view is contrary to the gloomy one this situation commonly induces. Closer analysis of the distribution of smoking through time among different social groups—defined by sex, age, and social class—shows that the habit is distinctly on the decline, and that this decline tends to have been earliest and sharpest among those who adopted the habit first, that is, upper-class men. Just as the adoption of the habit spread to lower-class men, then to upper-class women, then lower-class women, so it seems the quitting of the habit is likely to go.

There is a lesson in this for prevention. We deal, not with a failure of health education, but with the growing success of a social movement. A social movement can be described as the expression of socially shared demands for change in some aspect of the social order.[7] A social movement may be in different proportions directed—founded on formal associations with structured groups of leaders and members who espouse specific programs—and undirected: founded on informal interaction among partisans. Participants hold in common the rejection of existing values, strive for converts, and aim to change society either through influencing public policy or private persuasion or both.

Experience teaches that nothing less than a social movement will change such deeply ingrained behavior as smoking, diet, and exercise. But the movement alone is usually not enough to effect change in an entire society. The ultimate diffusion through all social classes of the benefits of a social movement will ordinarily require political action. The movement relating to smoking, diet, and exercise, like most social movements, is class-based. Its impetus comes from the better educated social classes, and so we see its benefits distributed in the same manner. The effect is thus to exaggerate the huge existing disparities in health between the social classes. As a result, to the disproportionate burden carried by the lower social classes in infant mortality, chronic handicap, respiratory disease, stomach and cervical cancer, and psychiatric disorders—a long list indeed—we must now

add obesity and coronary heart disease, and the many consequences of smoking.

Unless political action so changes the economic and social forces that act to structure the behavior of the poorer classes, change among those classes toward behavior that promotes health is bound to be slow. Lack of education, lack of access to healthy foods and to places for exercise, and the immense pressures of the advertising media combine with poverty to sustain damaging behavior. Thus, by far the greatest potential for prevention lies beyond the regular bounds of medical care, in social and political change.

In short, regular medical care can have a preventive effect, but will of itself do little to penetrate the cultural norms of societies or of particular social classes. To accomplish major health change in a directed manner will often require no less than the momentum of a social movement, followed by political and legislative action.

Costs and Prevention

My third question relates to costs: Can and should prevention pay for itself? This question is in the now well-entrenched tradition of cost-benefit analysis. In a previous annual conference of the New York Academy, health economist Rashi Fein expressed profound unease about this type of analysis. He pointed out that while ostensibly a strictly detached economic balance sheet is being drawn up, value judgments about priorities are all the time being silently made. As we make our economic decisions, we are in fact covertly choosing between infant and adult, the sick and the well, the white and the black, the poor and the rich, the male and the female, the mentally and the physically disordered.

Further, the economist is concerned primarily with monetary values or monetary equivalents of other values in the short term and in a given economic system. This concentration on narrow values places him at special risk of substituting narrow measures for broad effects and benefits. Only thus could an early effort at cost-benefit analysis conclude that to immunize the children on Indian reservations against measles would not justify the costs.

Even so, if one must consider costs in terms of the cost-benefit analysis, one can conclude that several of the interventions discussed above will, so to speak, pay for themselves. Examples are screening for

Down's syndrome and for neural tube defects, and fluoride to protect against dental caries. Some forms of prevention will almost certainly save costs. We must await evaluations of a large range of preventive techniques to say how much in all.

COST-CONTAINMENT

Finally, I turn to the question implicit in the theme of the conference: Will preventive programs lower the costs of medical care in the United States today? My answer, unhedged, is that they will not. I offer four reasons for my conclusion.

First, many benefits of prevention are reaped not at once but in the future. Years must pass before institutional costs are lowered by the prevention of phenylketonuria, of Down's syndrome, or of smoking, or even of alcohol abuse.

Second, many benefits (whether costed or not) incur to society at large, say in productivity or happiness, and not to the medical care system directly. These do not lower medical costs.

Third, when many lives are saved by prevention, as they have been, an increase in the numbers of older age groups must follow by virtue of this success. Because of the age-linked distribution of much disease (organic or physiological disorder), a relative increase in disease frequency must also follow. This argument can be extended to the increased survival of handicapped individuals. The result is an increase in the costs of medical care.

Fourth, and most important, whatever the proportion of disease and injury eliminated by prevention, the amount of illness (self-perceived dysfunction) and of sickness (the adoption of the social role of sickness) is unlikely to be eliminated proportionately.[8]

On the side of the consumers, so-called, a population seeks its medical care impelled by social and economic forces. The international study of primary care carried out by Kerr White and his colleagues,[9] for instance, found a remarkably constant rate of physician visits across many countries and medical care systems. The ways in which a medical care system meets this demand, it seems to me, will determine its costs.

This is to say that the costs of medical care in the United States are generated much more by the nature of the medical care system than by the substrate of disease in the population. We must look to the side of the providers. How will prevention contain the economic requirements and

demands of specialized care? How will prevention counter the technological imperatives channelled through our fragmented hospital system? How will prevention damp the fee-for-service pressures sustained by an open-ended private and public insurance system?

All these cost-generating components have been rampant and increasing in the face of a tremendous decline in mortality and in morbidity from many diseases. That decline has been accompanied by a lesser decline, probably, in illness (we lack data), but by no detectable decline in sickness (as measured by the manifest demand for medical care).

It seems most unlikely, then, that the relief of a fraction of medical costs because of prevention will relieve the social pressures that lead people to seek medical care. The relief that does occur, one may predict, will rapidly be absorbed as a result of the economic and technological momentum generated by providers and insurers. No mere shift in the disease targets of health care will contain medical costs. To prevent disease is not to impede the forces that generate the costs. To impede those forces we must, I conclude, change the system.

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